# WATER RESOURCES OF THE ATLANTA REGION

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## INTRODUCTION

The purpose of this paper is to serve as a basic primer on water resources in the Atlanta Region. It will provide an overview of the physical nature of the resource and some of the basic aspects of its institutional management framework.

### Precipitation

In the Atlanta area, precipitation occurs mostly as rain. The National Climatic Center reports that average monthly rainfall in the Atlanta area ranges from a low of 2.67 inches in October to 5.55 inches in March with an annual precipitation average of 48.79 inches. The most rainfall for a calendar year occurred in 1948 with 71.45 inches. The driest year on record was 1954 which received 31.8 inches of rainfall. The record 24-hour rainfall of 7.36 inches occurred in March, 1886. Dry periods occur mainly during the late summer and early autumn with maximum thundershower activity during July. The average annual snowfall is about 2.0 inches. The record snowfall of 8.3 inches occurred January 23, 1940. Ice storms (freezing rain) occur about once every two years, causing hazardous travel and disruption of utilities. Severe ice storms occur about once in ten years, causing major disruption of utilities and significant property damage.

### Groundwater

Groundwater is water found below the surface of the earth. In Georgia, the Fall Line generally runs along a line from Columbus to Macon to Augusta and divides the Piedmont area to the north from the Coastal Plain area. In the Coastal Plain south of the Fall Line, groundwater is abundant and easily accessible because of the porous, sandy soils and rock. In the Piedmont, which includes the Atlanta Region, the underlying rock is not porous. Groundwater is found only in isolated cracks and crevices of the bedrock. Wells yielding small amounts provide water to individual homes and small cities, but this groundwater cannot serve the needs of major water systems. In recent years new methods used by hydrogeologists have improved the chances of drilling better yielding wells and groundwater use will increase. However, even with such improvements, groundwater will never be a significant source of water in the Atlanta Region. Less than one percent of all water used in the Atlanta Region comes from groundwater.

### Surface Water, Drainage Basins and Major Rivers

The Atlanta Region is one of the few major metropolitan areas located on a subcontinental divide. As a result, the Region's streams and watershed areas are small and originate in the Atlanta area, with the exception of the Chattahoochee River.

About 60 percent of the Region is drained by the Chattahoochee, Etowah and Flint rivers, which are part of larger river basins which flow to the Gulf of Mexico. The Chattahoochee River and the Flint River are part of the Apalachicola-Chattahoochee-Flint (ACF) River Basin. The Etowah River is part of the Alabama-Coosa-Tallapoosa (ACT) River Basin. The rest of the Region is drained by the Alcovy, South and Yellow rivers. These rivers join south of the Region at Lake Jackson to form the Ocmulgee River. These rivers are part of the Ocmulgee-Oconee-Altamaha River Basin.

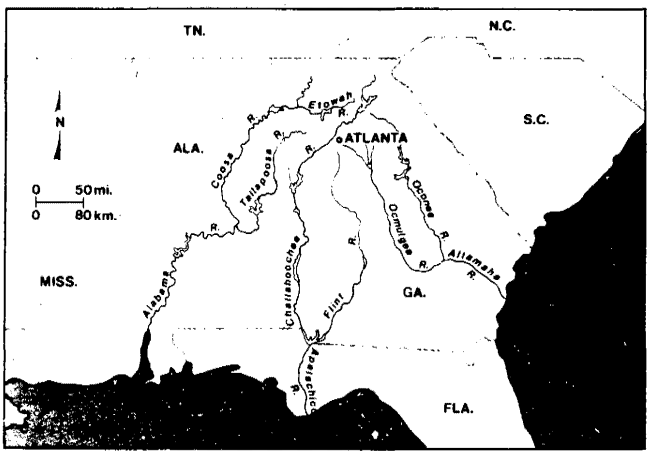


**Figure 1. Map of Georgia and Atlantic Ocean and Gulf of Mexico.**

The headwaters of the South River are near the State Capitol; the Flint River at Hartsfield International Airport; the Yellow River north of Lawrenceville; and the Alcovy River east of Lawrenceville. The headwaters of the Chattahoochee and Etowah rivers are in North Georgia. These two rivers have much larger watersheds than the others and consequently their flow is much larger. The Chattahoochee and Etowah rivers have been dammed by the Corps of Engineers to form Lake Lanier and Lake Allatoona, respectively.

For many years, the U.S. Geological Survey has kept records on river flows. Information is available from the District Office, (404) 986-6860. In the table below, information is summarized for some of the Atlanta Region's major rivers and creeks.

The Chattahoochee River is by far the largest stream in the Atlanta Region. Since 1957, its flow has been controlled by releases from Buford Dam. Thus the typical summer low flows have been much larger than the record low flow set in September, 1957. The water that is released from Buford Dam comes from deep in Lake Lanier and is much colder than other area streams. It supports cold water trout fishing that was not possible in the warm waters of the Chattahoochee before Lake Lanier was built.

The other streams in the table originate within the Atlanta Region and their flows are much smaller than the Chattahoochee's. Although some low flows were experienced in 1981, 1986 and 1988, the worst annual drought on record within the Atlanta Region is still considered to be 1954.

**Corps of Engineers Lakes**

The U.S. Army Corps of Engineers has constructed two major lakes at the edges of the Atlanta Region which are keystones in the area's water resource system. Each reservoir was specifically authorized by Congress and serves numerous purposes: hydroelectricity, flood control, navigation, water supply and recreation.

The power generated at the dams is primarily used to meet peak electrical demands because of the easy on/off feature of hydroelectricity. The electricity is sold to municipal electric systems and electric membership cooperatives throughout the Southeast at prices based on the construction cost of the dams and lakes.

In a "normal" year, when there is sufficient rainfall, the lake levels are held constant during the summer recreation season because there is sufficient water inflow to satisfy contractual power commitments. In late summer, the dams begin to release more water to lower the lake level so that there will be extra capacity to store the heavy winter and spring rains and control downstream flooding. Fall releases are also made from Lanier to support the navigation channel below Columbus, Georgia. By late spring, the lakes are back up to their normal pool elevation. During droughts and periods of above-average

**Table 1. Facts About the Lakes.**

| | Lanier | Allatoona |
|---|---|---|
| Surface Area (acres) | 38,000 | 11,860 |
| Shoreline (miles) | 540 | 270 |
| Annual Energy Output 1991 (megawatts) | 177,202 | 171,015 |
| Construction Period | 1950-57 | 1944-50 |
| Annual Visitor Days 1991 | 19,061,587 | 12,500,931 |
| Popularity Ranking Among Corps Lakes | 1 | 4 |
| Lake Level (elevation above mean sea level, in feet) | | |
| Average-Summer | 1,071 | 840 |
| Average-Winter | 1,065 | 825 |
| Maximum | 1,077.2 (Apr. 1964) | 861.2 (Apr. 1964) |
| Minimum | 1,052.7 (Dec. 1981) | 809.3 (Dec.1954) |

**Table 2. Stream Flow Data in cubic feet per second.**

| Gaging Location | Ave. (cfs) | Max. (cfs) | Min. (cfs) |
|---|---|---|---|
| Chattahoochee River at Paces Ferry Bridge | 2,546 | 59,000 (1/9/46) | 296 (9/2/57) |
| South River near Lithonia | 290 | 12,500 (1/17/90) | 48 (7/20,21/88) |
| Yellow River near Snellville | 177 | 12,600 (3/17/90) | 1.5 (10/9/54) |
| Peachtree Creek at Northside Drive | 137 | 9,650 (3/17/90) | 6.0 (10/3,4/81) |
| Sweetwater Creek near Austell | 335 | 10,700 (2/4/82) | 2.1 (10/9/54) |
| Line Creek near Senoia | 130 | 9,580 (11/5/77) | 1.0 (10/7/86) |
| Flint River near Lovejoy | 168 | 8,690 (3/17/90) | 12 (10/20/87) |

Source: U.S. Geological Survey Water Resources Data, Georgia-Water Year 1991

rainfall, the lake level could be well above or well below these normal conditions.

Both lakes have historically enjoyed good water quality due to their relatively undeveloped watersheds. However, increasingly rapid growth above and around the lakes has great potential for degrading water quality. Both lakes Lanier and Allatoona are the subject of water quality studies under the federal Clean Lakes Program, administered by Georgia EPD. The Georgia EPD contracted with the University of Georgia for a study of Lake Lanier and Kennesaw College for a study of Allatoona to monitor and evaluate the situation.

**Water Systems**

There are 23 separate surface water intakes that are managed by 14 different agencies in the Atlanta Region. A total of 42 water agencies retail this water to the public. There are 20 public water treatment plants in the Atlanta Region. These facilities process water withdrawn from rivers and lakes and make it suitable for human consumption. This technology involves filtering out sediments in the raw water by passing it through a bed of sand. Consequently, water treatment plants are frequently called filter plants. Other treatment units in a filter plant are included to make the filtration process more effective and to disinfect the final product.

For water sources that are very clean, such as Lake Lanier, some treatment steps are not necessary and the treatment plants may only require filtration and chlorination. Groundwater is typically only chlorinated before entering the distribution system.

Public water supply systems are regulated by state and federal law. State withdrawals permits are required from the Georgia EPD for surface water and groundwater withdrawals over 100,000 gpd. State operating permits are also required for the treatment and distribution systems. Under the federal and state Safe Drinking Water Acts, the Georgia EPD regulates the water quality of public water supply systems. Operators monitor water quality and test regularly for over 140 contaminants to be sure that the public water supply is safe to drink.

The ten largest water treatment plants in the Atlanta Region and their capacities in million gallons per day (MGD) are shown in Table 3.

**Planning for Future Water Supply**

The ARC Regional Water Supply Plan forecasts future water demand and outlines where the water should come from to the year 2010. Due to projected population and employment growth, our water demands are expected to grow by almost 60%. The Plan calls for 379 MGD average from the Chattahoochee River and 105 MGD from Lake Lanier for the Atlanta Region by the year 2010. Note that these numbers don't represent consumptive use since 74% of the water is treated and returned to the Chattahoochee.

**Table 3. Ten Largest Water Treatment Plants.**

| Name | Jurisdiction | Capacity |
|---|---|---|
| Hemphill/ Chattahoochee | Atlanta | 201 |
| Scott Candler | DeKalb County | 121 |
| Lake Lanier | Gwinnett County | 100 |
| Wyckoff | Cobb County | 72 |
| Quarles | Cobb County | 58 |
| Atlanta-Fulton County | Atlanta-Fulton County | 45 |
| Little Cotton Indian Creek | Clayton County | 20 |
| Shoal Creek/Flint River | Clayton County | 12 |
| Sweetwater Creek | East Point | 12 |
| Indian Creek/ Towaliga River | Henry County | 6 |

Lanier Reallocation. Local water utilities, the ARC, the State of Georgia and the Corps of Engineers have been studying and planning for the Region's long-range water needs since 1973. In 1989, after 16 years, the U.S. Corps of Engineers recommended that the best alternative to provide water supply for the Atlanta Region and Lake Lanier communities was to "reallocate" or change a portion of the water storage in Lake Lanier from hydropower use to water supply use. This reallocation would provide for 80% of the Atlanta Region's water supply to the year 2010. The Corps also proposed a minor reallocation of Lake Allatoona for another 10% of the Region's needs.

**Tri-State Comprehensive Study.** In June or 1990 the State of Alabama filed a lawsuit, later joined by the State of Florida, to prevent the Corps from entering into any agreements to increase withdrawals or releases for water supply from Lakes Lanier and Allatoona. Alabama asked for a more comprehensive study and review of environmental impacts. Alabama also objected to several local and regional reservoirs proposed in north Georgia.

Negotiations among the three states were conducted during 1990 and 1991. A Plan of Study for a Comprehensive Study of the Alabama-Coosa-Tallapoosa (ACT) and Apalachicola-Chattahoochee-Flint (ACF) River Basins was agreed to by the three states and the Corps of Engineers. The study is designed to determine the capabilities of the basin's water resources. It will describe demands, water availability, evaluate alternatives and recommend a coordination mechanism for basinwide management and dispute resolution. The study will take three to five years. Another result of the negotiations was a Memorandum of Agreement signed in January by the three states. The agreement provides that Alabama will move its lawsuit to the inactive docket, the States will support the ACT/ACF Comprehensive Study, the Corps will withdraw the proposal to reallocate Lake Lanier for the Atlanta Region, and

water will be provided as needed until the study is completed.

The three states and the Corps of Engineers have been negotiating detailed scopes of work for the Comprehensive Study since July, 1991. Work on the Study will begin as agreement is reached on the scopes of work and the budget. Current budget estimate is $11 million.

**Water Use**

The water treatment plants in the Atlanta Region produce a combined total of approximately 350 million gallons per day (MGD) during an average day. This water is pumped into distribution systems to satisfy the demands of homes, business, government and industry. The components of this demand are shown in Table 4.

**Table 4. Water Demand as Percent of Total**

| Demand Component | Percent of Total |
|---|---|
| Residential | 54% |
| Commercial | 28% |
| Government | 4% |
| Industrial | 14% |
| | 100% |

| Residential Use | Percent of Total |
|---|---|
| Toilet | 28% |
| Laundry | 22% |
| Showers | 21% |
| Faucets | 12% |
| Baths | 9% |
| Dishwasher | 3% |
| Toilet leakage | 5% |
| | 100% |

Source: U.S. Department of Housing and Urban Development.

**Residential.** The largest part of our water demand is due to residential use. On average, indoor residential water consumption is approximately 75 gallons per person per day. This consumption generally used is shown in Table 4.

Outdoor water use can vary considerably by lot size, water use habits, and type of landscape. A national average estimate is 45 gpcd but usage can range from 0 to over double the average winter use.

In recent years, conservation efforts have been directed at reducing demand. In new dwellings with water conserving appliances and fixtures, it is estimated that consumption drops to as low as 60 gallons per person per day.

Industrial demand is smaller in the Atlanta Region than in many other urban areas because our industries include a higher proportion of activities such as warehousing and assembly rather than heavy water-using industry such as paper or chemical manufacturing. Many industries are reducing their water consumption as a way to control the cost of wastewater treatment.

**Water Conservation**

Water conservation is an important element for meeting future water supply needs. The Atlanta Regional Commission's Regional Water Supply Plan shows that over 20 percent of the Region's future water supply must come from water conservation. This need for water conservation has only been reinforced by disputes with neighboring states and difficulties encountered in building new or reallocating old reservoirs. All governments, businesses and citizens need to work to put water conservation measures in place. Some of the major elements being pursued as part of the Region's water conservation program are:

- Ultra Low Flow (ULF) Plumbing Fixtures--A new state law and local ordinances require installation of these water saving fixtures in new construction. ULF fixtures have the potential to reduce indoor water use by 25 percent.
- Demand Pricing--In much of America, water prices decrease with increased use. But unlike much of the country, the most common rate structure in the Atlanta Region is the uniform rate structure which promotes conservation. Water savings are encouraged because the cost of water is directly proportional to the amount of water used. In addition, the Atlanta Regional Commission recently adopted a policy which focuses on more aggressive pricing measures to reduce peak outdoor watering demand. This policy encourages local governments to apply a surcharge to excessive water users in the Atlanta Region. Such policies reduce peak demand and allocate the cost of service more fairly.
- Low-Water Using Landscaping (Xeriscaping)--Water use can double in the summer months, mostly due to outdoor watering. Xeriscape landscaping techniques use native and drought-hardy plants instead of turf and other thirsty exotics to cut water demand. Xeriscapes also offer more shade, and require less maintenance, fertilizer and herbicides, cutting costs and drought risks. The University of Georgia Cooperative Extension Service has developed guidelines and educational materials to promote xeriscaping.
- Industrial Policy--Government and development agencies have long discouraged water intensive industries from locating in the Region. Atlanta leaders know that the best use of our limited water resources is to support people and industries which are not large water users.
- Education--Water utilities in the Atlanta Region have routinely included flyers in water bills to provide advice on conservation. Education programs are conducted through the public school systems and have included billboard contests, videos and presentations. The City of Atlanta is providing water conservation packages to each one of its customers that include a toilet displace-

ment device, dye tables for leak detection, and shower flow meter devices. The Cobb-Marietta Water Authority has hired the state's first full-time water conservationist at a public water utility. The Georgia Water Wise Council has been formed to develop and publicize water conservation techniques.

- Water Recycling--Treated wastewater is being reused for irrigation and other nondrinking purposes, thereby reducing demand and wastewater discharges into streams. Clayton and Cobb counties are leaders in the reuse of treated wastewater for golf course and other irrigation purposes.

**Drought Restrictions.** In addition to the water conservation measures already mentioned, water demand can be reduced even further in emergency or drought situations.

- Outdoor Water Restrictions--Most governments in the Atlanta Region have imposed outdoor water restrictions during droughts.
- State Emergency Action--Although normal water use restrictions are administered by local governments, the state can and has imposed temporary reductions in Atlanta Region water withdrawals. In May 1988, the state mandated a 10 percent reduction in withdrawals from the Chattahoochee and Lakes Lanier and Allatoona. Atlanta Region governments, through cooperative water restrictions, far exceeded the request by achieving a reduction of 25 to 30 percent.

**Wastewater Treatment Systems**

A wastewater treatment plant speeds up the natural processes by which water purifies itself. Because of the concentration of population and industry in the urban area, our streams and rivers would be incapable of receiving and assimilating the vast quantity of untreated wastewater generated. Wastewater treatment plants enable us to reduce pollutants and protect our streams. The level of treatment depends on the size of the plant, the downstream use of the river, and the characteristics of the river, including its size. The minimum level of treatment is called "secondary treatment" and means that about 85 percent of the organic pollutants are removed. Advanced wastewater treatment plants are also referred to as water reclamation facilities because the high quality effluent can be used for other purposes such as golf course irrigation or industrial process water. A secondary treatment system usually involves screening, grit removal, oxidation, solids settling and disinfection.

All of the larger wastewater treatment plants in the Atlanta Region must meet treatment levels more stringent than secondary treatment. This involves additional processes to remove nutrients such as nitrogen or phosphorus or suspended organic matter.

Land application of treated wastewater is also being used in several places in the Region as the final step in removing pollutants. The treated wastewater is sprayed on forested land, golf courses, or landscaped areas through a sprinkler system. The largest land application site in the Region is the Clayton County Water Authority's 4,000 acre E. L. Huie Land Application site. Each day 14 million gallons of treated wastewater are sprayed on forests which act as a living filter further purifying the treated effluent. Clayton County actually recycles its wastewater since the water percolates through the soil and back to the Authority's major raw water supply.

**NPDES Permit.** The Georgia Water Quality Control Act requires that municipal and industrial treatment plants obtain a NPDES permit in order to discharge to streams or obtain a Land Application System Permit for zero discharge systems. The permits are issued by the Georgia EPD and specify the allowable discharge amounts.

In the Atlanta Region there are fifty-seven municipal NPDES permits, about forty-five industrial NPDES permits and eight LAS permits. The twelve largest wastewater treatment plants in the Atlanta Region and their capacities in million gallons per day (MGD) are shown in Table 5.

**Planning for Future Wastewater Disposal**

In 1992, a cooperative study by the City of Atlanta, Cobb, DeKalb, Fulton and Gwinnett counties which looked at long-range wastewater disposal alternatives was completed. The study was coordinated by ARC and focused primarily on wastewater plants which discharge to the Chattahoochee River.

ARC developed wastewater flow forecasts for each jurisdiction out to the year 2040. Wastewater treatment options and conveyance options were developed and analyzed for treating and disposing of those wastewater flows. A wide variety of regional alternatives were analyzed, ranging from continuation of local treatment plat operations to consolidation of treatment plant operations at a single regional plant site. Alternative technology options, such as water conservation, land treatment and disposal, and water reclamation and reuse, were also evaluated. The feasibility of each alternative was evaluated based on environmental and economic considerations. The local treatment alternative was selected as the preferred alternative and adopted by the ARC Board as a component of the regional wastewater planning process. This alternative consists of expanding existing facilities in place. The preferred alternative will include an estimated $1.7 billion in capital improvements for the next 50 years for expansion of existing wastewater conveyance systems and treatment plants.

Water resources issues which may have an influence on the plan in the future include the comprehensive study of the Apalachicola-Chattahoochee-Flint River system being conducted by the Corps of Engineers. The Georgia

**Table 5. Twelve Largest Wastewater Treatment Plants.**

| Name | Jurisdiction | Capacity |
|---|---|---|
| R. M. Clayton | City of Atlanta | 101 |
| South River/ Intrenchment Creek | City of Atlanta | 41 |
| R. L. Sutton | Cobb County | 40 |
| Utoy Creek | City of Atlanta | 37 |
| Snapfinger Creek | DeKalb County | 36 |
| South Cobb | Cobb County | 28 |
| Pole Bridge | DeKalb County | 20 |
| W. B. Casey, Sr. | Clayton County | 15 |
| Camp Creek | Fulton County | 13 |
| Yellow River | Gwinnett County | 12 |
| Big Creek | Fulton County | 11* |
| Crooked Creek | Gwinnett | 6.5** |

*22 in Summer '93 and **16 in February '93.

Environmental Protection Division will also be developing an advanced water quality model of the chattahoochee River between Buford Dam and West Point Lake, and a water quality model of West Point Lake itself, which will be used to reevaluate discharge permit limits. If water resource management policies are changed as a result of these studies, the plan can be revised appropriately.

**Septic Tanks**

It is sometimes more cost effective and environmentally sound to treat household sewage at the home site rather than to pipe the sewage to a central treatment plant. Such onsite wastewater disposal is usually accomplished by constructing a septic tank system. In the Atlanta Region, less than 20% of households use septic tanks. Septic systems are typically found in more rural, outlying areas. Although the proportion of dwellings served by septic tanks in the Region is relatively small and will continue to decline as sewer lines are extended and development density increases, some areas will continue to rely on onsite systems well into the 21st century.

A septic tank is simply a tank buried in the ground. Wastewater flows into the tank, bacteria in the wastewater break down the organic matter, and the cleaner water flows out of the tank into sub-surface drain fields consisting of a series of perforated parallel pipes laid in gravel or crushed stone. In the tank, sludge or other matter settles to the bottom, so it must be removed periodically and disposed of in a sanitary manner.

Since septic tanks depend on the ability of the soil to filter and absorb the remaining impurities in the water that enters from the drain field, septic tanks need certain site characteristics to function properly. They need soil witha percolation, or infiltration, rate that is neither too rapid or too slow. The ground slope should not be too steep. The septic tank should not be too close to bedrock or a high water table. And there should be enough space to replace one drain field with another if the first should fail.

Septic tanks are generally regulated by county health departments under the Georgia Department of Human Resources rules.

**Floods and Floodplains**

Floodplains are the lowlands adjoining streams or rivers that are subject to periodic and temporary flooding. A floodplain undisturbed by human activity serves as a natural drainage channel for flood flows. The vegetation of the floodplain retards the velocity of the flows and allows infiltration of water and settling of sediments. The floodplain also provides wildlife habitat.

The size of a flood is described by its likelihood of occurrence. For example, a "50-year flood" is one likely to occur on the average once in 50 years. Another way of referring to a 50-year flood would be to say it is a flood which has a 2 percent chance of occurring in any year. Floodplains are described by the size of the flood that can

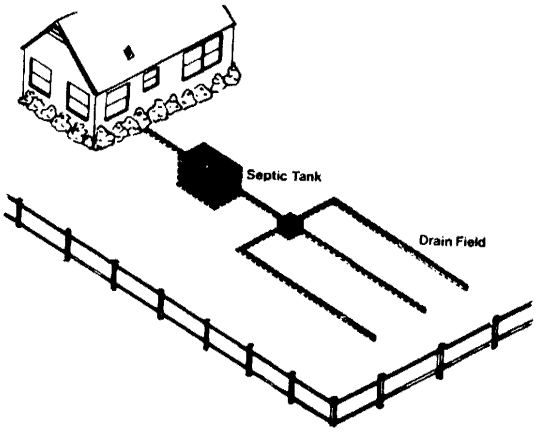


**Figure 2. Illustration of a septic tank.**

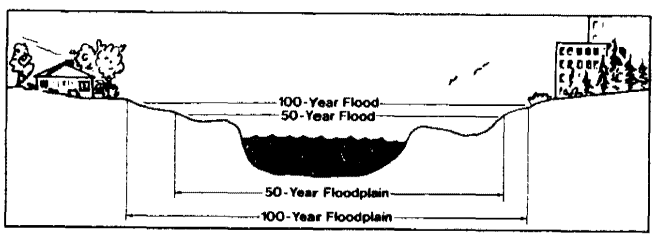


**Figure 3. Ilustration of 50 and 100 year flood.**

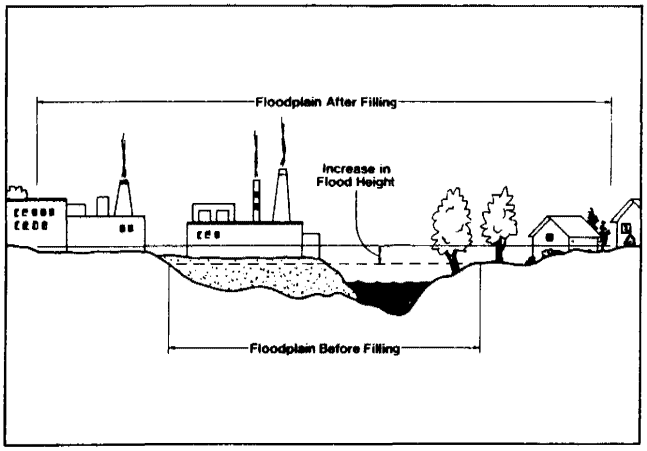


**Figure 4. Illustration of floodplain before and after filling.**

inundate them. Many floodplain regulations refer to the 100-year flood (one which has a 1 percent chance ofMost occurring each year).cities and counties in the Atlanta

Urban development increases the frequency and of flooding by removing vegetation, filling natural storage areas, covering floodplains and watersheds pavement, and reducing the size of the natural available for flood flows. These disturbances flood velocities and flood heights. As watersheds in Atlanta Region are developed, buildings built in the plains face increased risk as flood levels rise. opment adjacent to natural floodplains may become subDevelfloodtheincreasechannelwithwaterseverityRegion ject to flooding as floodplain areas increase.have adopted floodplain zoning ordinances which control development in floodplain areas to protect citizens and to preserve the natural benefits of floodplains. Many local governments in the Region also require new developments to include facilities to hold stormwater flows to pre-development rates. This is usually accomplished with detention or retention facilities that temporarily store the excess runoff, and release it slowly to reduce increases in downstream flooding. Floodplain boundary maps have been published by the Federal Emergency Management Agency (FEMA) for all Atlanta Region counties. Copies of these maps are available through the Georgia Environmental Protection Division Floodplain Management Unit 656-6382.

**Wetlands**

Wetlands are areas that are wet enough during the growing season, so that they show evidence of wet soil types and support vegetation that is adapted to saturated soil conditions. Some wetlands, such as marshes and swamps, are easy to identify. Other wetlands, such as bottomland forest and wet meadows, are less obvious, since they may be dry part of the year or not be visibly wet. Wetlands are a valuable resource that provide flood storage, groundwater recharge, filter sediment and pollutants from runoff and provide erosion protection. Wetlands also serve as important habitat for many plant species as well as for fish, waterfowl and other wildlife. Throughout the United States, a large portion of wetlands occur in coastal areas. Inland, they are usually found near rivers and lakes and in other low-lying areas. In the Atlanta Region, wetlands generally occur in bottomlands, along impoundments, rivers and in floodplains.

Wetlands are protected under Section 404 of the Federal Clean Water Act, which is administered by the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency. Section 404 requires that any activity involving the deposition of dredged or fill material into "waters of the United States, including wetlands," must receive a permit from the Corps of Engineers. Some of the activities requiring permits include: filling and grading, levee and dike construction, land clearing, road construction, dam construction and placement of structures or structural supports in a wetland. The final determination of whether an area is a wetland and whether an activity requires a permit must be made by the local Corps of Engineers District Office. The Savannah District Office serves the Atlanta Region. Questions concerning wetland designations or the need for a permit can be directed to the District office in Savannah at (800) 448-2402.

Planning-level wetlands location information is available on maps produced by the U.S. Fish and Wildlife Service. The U.S. Fish and Wildlife maps are available through the Georgia DNR Map Room (656-3214). The State of Georgia has also produced color-coded maps developed from satellite imagery at the quad sheet scale. These maps indicate wetland categories along with other vegetation types and urban development. The DNR maps are available at the Atlanta Regional Commission. Neither set of maps provides site-specific information. On-site evaluations are necessary to determine the presence of wetlands on any specific parcel. Also, the U.S. Soil Conservation Service (SCS) has published a list of hydric (wet) soils. This list is available from local SCS offices along with county soil surveys. If the soil in your area is listed as hydric, the area might be a wetland.

**Stormwater Runoff Pollution**

The Atlanta Region's wastewater treatment plants should eventually be able to treat their sewage so adequately that most of the pollutants flowing to the Region's streams will do so in stormwater runoff. This stormwater runoff pollution is also known as nonpoint source pollution. As streets, structures and paving replace woods and fields, the layers of undisturbed soil, vegetation and plant material that slow and filter runoff are lost. The rate and

amount of stormwater runoff then increases and flows quickly into the Region's streams through a network of drainage pipes and channels. Pollutants, including dust, dirt, litter, animal droppings, motor oil, gasoline, pesticides, fertilizers and other toxic materials that we deposit on the land surface are flushed into the Region's streams each time it rains. In addition, this fast-moving runoff erodes construction areas and other bare soil, adding sediment to the runoff. As the drainage network collects the runoff, its amount and velocity increases. The runoff and its load of pollutants and sediment pour into streams, resulting in the erosion and undercutting of streambanks, downstream sedimentation and overall degradation in water quality.

The U.S. Congress decided in 1987, when it amended the Clean Water Act, that stormwater pipes should be permitted just as wastewater discharges are and programs be developed to control the impacts of stormwater discharges on water quality. In November, 1990, the U.S. EPA issued rules that required large urban areas and industrial activities to apply for permits to discharge stormwater. In response to these rules, the Georgia Environmental Protection Division (EPD) developed a permitting strategy that requires all governments within the five-county area of Clayton, Cobb, DeKalb, Fulton and Gwinnett to submit a completed permit application by November 16, 1992. Eventually all municipalities will likely be required to obtain a permit to discharge stormwater. These new rules will require that local governments devote more resources and staff to controlling the water quality of storm water runoff from their storm sewer systems.

The Atlanta Regional Commission assisted the local governments in the five-county area in forming the Atlanta Region Storm Water Management Task Force to provide an opportunity and forum in which a consistent and efficient approach to storm water management and the permit application requirements could be developed. ARC staff facilitates the Task Force. In Part I, which was primarily an inventory process, ARC prepared maps of land use, storm water outfalls and other environmental features. ARC staff also assisted each local government by reviewing and summarizing their existing legal authority and preparing reports on existing water quality and rainfall conditions. In Part II, ARC assisted local governments by contracting with a regional consultant to develop and implement a storm water sampling program. ARC staff is also helping local governments identify potential storm water management programs and ordinances for discharges to the municipal storm sewer systems.

The EPA rules require that local governments develop a variety of programs to control the impacts of stormwater on water quality. In the future, local government and industry programs may include the following activities:

- Water Quality Structures--Require structures that collect or convey runoff and remove or filter pollutants from the stormwater. Such structures could include: detention ponds, which hold water and allow pollutants to settle out, or retention structures that detain stormwater for longer periods for water quality purposes.
- Minimize Paved Areas--Place limits on lot size or limit the amount of ground coverage by structures and paving (impervious surfaces) within a development to minimize the amount of stormwater runoff generated.
- Proper Disposal of Hazardous Household Wastes--Develop collection centers for household wastes such as used motor oil, paint, pesticides and other hazardous materials to prevent dumping into storm drains or onto land surfaces.
- Stream Buffers--Maintain undisturbed vegetative buffers between cleared areas and adjacent streams, rivers and lakes.
- Stream Monitoring Programs--Periodic monitoring of stormwater collection systems, discharges and streams to identify and eliminate improper discharges and other sources of pollutants.

**Water Supply Watersheds and River Corridor Protection**

Twenty-two watersheds in the Atlanta Region are the focus of protection efforts because they are, or are proposed to be, water supply watersheds. The Chattahoochee River Corridor between Buford Dam and Peachtree Creek are subject to the requirements of the Metropolitan River Protection Act and the *Chattahoochee Corridor Plan*. The Plan provides for undisturbed river buffers, building setbacks and restrictions on the amount of land disturbance and pervious surface allowed. These requirements are applied by local governments within 2,000 feet from either bank of the Chattahoochee River. The other watersheds and their streams are subject to minimum protection criteria from the Georgia Department of Natural Resources under the 1989 Georgia Growth Strategies legislation. The criteria must be addressed in the local comprehensive plans required by Growth Strategies, which will be developed through 1995. The specific minimum criteria vary with the size of the watershed and whether water is withdrawn from a river intake or is stored in a reservoir. The water supply watersheds in the Region, and the jurisdictions withdrawing from them, including those outside the Atlanta Region, are listed below.

In addition to the Metropolitan River Protection Act and Chattahoochee Corridor Plan for the Chattahoochee River, specific watershed protection plans already exist for several of these water supply watersheds in the Region. These include the Dog River and Bear Creek basins in Douglas County, the Rockdale portion of Big Haynes Creek basin and the county portion of all water supply watersheds in Fayette County.

**Table 6. Water Supply Watersheds in Atlanta**

| Water Supply Watershed | User Jurisdictions |
|---|---|
| Alcovy River | Monroe |
| Anneewakee Creek | Douglas County |
| Bear Creek | Douglas County |
| Big Creek | Roswell |
| Big Haynes Creek (proposed) | Rockdale County |
| Cedar Creek (proposed | Palmetto for Coweta County) |
| Chattahoochee River | Atlanta,Cobb, De Kalb, Fulton,- Gwinnett Counties |
| Cotton Indian River | Clayton County |
| Dog River | Douglas County |
| Flat Creek | Fayette County |
| Flint River | Clayton County (proposed for Fayette County) |
| Horton Creek (proposed) | Fayette County |
| Indian Creek | Henry County |
| Line Creek | Fayette County, |
| Coweta | Little Cotton |
| Indian/ | |
| Pates Creek | Clayton County |
| Long Branch Creek (proposed) | Henry County |
| Pelham Creek (proposed) | Fayetteville |
| Shoal Creek | Clayton County |
| Sweetwater Creek (Douglas/Cobb Counties) | East Point |
| Towalinga River | Henry County |
| Walnut Creek | McDonough |
| Whitewater Creek (proposed) | Fayette County |

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